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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,322	10/14/2003	Mark Hirst	200309706-1	5015

22879 7590 09/22/2006

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EXAMINER	
YAN, REN LUO	

ART UNIT	PAPER NUMBER
2854	

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/685,322	HIRST ET AL.	
	Examiner	Art Unit	
	Ren L. Yan	2854	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-15 and 17--47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *3-5,13-15,25-27 and 35-37* is/are allowed.

6)☒ Claim(s) *1,6,7,9-12,17-19,21-24,28,29,31-34,38,39 and 41-47* is/are rejected.

7)☒ Claim(s) *8,20,30 and 40* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 6, 7, 9-12, 17-19, 21-24, 28, 29, 31-34, 38, 39 and 41-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 01-120342 in view of Suski(5,419,780). The '342 patent teaches the method and structure of an imaging apparatus as claimed including an element that generates heat, a thermoelectric generator 6 thermally coupled to the element to convert waste heat from the element to electrical energy and convert electricity to cooling energy. See the abstract and Figs. 1-4 in '342 for details. However, '342 does not show the details as to how the electricity is used for cooling. Suski et al teach in a semiconductor integrated circuit apparatus having a cooling device 70 powered by the electrical energy converted from waste heat generated by the semiconductor device by a thermoelectric generator 50 to thereby cool the heat-generating component so as to reduce power consumption and improve efficiency. See Figs. 1-5 and column 4, line 51 through column 6, line 26 in Suski et al for example. It would have been obvious to those having ordinary skill in the art to provide the imaging apparatus of '342 patent with the cooling device powered by the electricity converted from waste heat as taught by Suski et al in order to reduce power consumption and improve operating efficiency of the imaging apparatus. With respect to the recited heat generating element being a print element or a fuser, the heat generating drying device in '342 patent functions to cure and affix the ink to the paper

and therefore is considered equivalent to a print element or a fuser as recited. Additionally, with the combined teaching of the applied prior art to convert the waste heat generated by a heat generating element in a device to useful electrical energy to thereby cool the device in an effort to reduce power consumption and improve efficiency of the device, one of ordinary skill in the art would be motivated to thermally couple the thermoelectric generator to a heat generating element such as a print element or a fuser in an imaging device to make use of the waste heat to cool the imaging device. With respect to claims 6, 18, 28 and 38, Suski et al teach in the last paragraph in column 4 that the thermoelectric generator 50 includes a Peltier device operating in a Seebeck mode. With respect to claims 7, 19, 29 and 39, '342 patent teaches a first surface of the thermoelectric generator 6 is mechanically coupled and thermally coupled to a housing of the printing machine and a second surface is thermally coupled only to the heat source to thereby allow removal of the heat source from the imaging apparatus. With respect to 10, 11, 22, 23, 32, 33, 42 and 43, Suski et al teach the use of a fan 70 as part of the cooling device to generate airflow and to reduce the temperature of the semiconductor device. It would have been obvious to provide the printing machine of '342 with a fan powered by the converted electricity to generate airflow and to reduce the temperature of the imaging apparatus.

Claims 8, 20, 30 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 3-5, 13-15, 25-27 and 35-37 are allowed.

Applicant's arguments filed on 6-29-2006 have been fully considered but they are not persuasive. The foregoing rejection is believed to have adequately responded to applicant's arguments with regard to the heat generating element being a print element or a fuser.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ren L. Yan whose telephone number is 571-272-2173. The examiner can normally be reached on 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ren L Yan
Primary Examiner
Art Unit 2854

Ren Yan
September 7, 2006